UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,240	02/27/2002	Takuya Watanabe	57127 (46342)	2962

21874 7590 06/25/2004

EDWARDS & ANGELL, LLP
P.O. BOX 55874
BOSTON, MA 02205

EXAMINER	
BUNNER, BRIDGET E	
ART UNIT	**PAPER NUMBER**
1647	

DATE MAILED: 06/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/070,240	WATANABE ET AL.	
	Examiner	Art Unit	
	Bridget E. Bunner	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-14* is/are pending in the application.

4a) Of the above claim(s) *3-8,10 and 12-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,9 and 11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1 and 3-14* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Application, Amendments and/or Claims

The amendment of 09 April 2004 has been entered in full. Claims 1, 9, and 11 are amended. Claim 2 is cancelled.

This application contains claims 3-8, 10, and 12-14, drawn to an invention nonelected without traverse in the communication of 15 September 2003. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 9, and 11 are under consideration in the instant application.

Withdrawn Objections and/or Rejections

1. The rejection of claims 1-2, 9, and 11 under 35 U.S.C. § 101, as set forth at pg 2-3 of the previous Office Action (04 November 2003) is *withdrawn in part* in view of the cancelled and amended claims (09 April 2004). Please see section on 35 U.S.C. § 101 (utility), below.

2. The rejections of claim 9 under 35 U.S.C. § 112, second paragraph, as set forth at pg 11 of the previous Office Action (04 November 2003) are *withdrawn in part* in view of the amended claims (09 April 2004). Please see section on 35 U.S.C. § 112, second paragraph below.

3. The rejection of claims 1-2, 9, and 11 under 35 U.S.C. § 102(b), as set forth at pg 11-12 of the previous Office Action (04 November 2003) is *withdrawn* in view of the amended claims (09 April 2004).

Claim Rejections - 35 USC § 101 and 35 U.S.C. § 112, first paragraph

4. Claims 1, 9, and 11 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a credible, specific and substantial asserted utility or a well established utility. Novel biological molecules lack well established utility and must undergo extensive experimentation. The basis for this rejection is set forth for claims 1-2, 9, and 11 at pg 3-6 of the previous Office Action (04 November 2003).

Specifically, the claims are directed to a purified protein which comprises the amino acid sequence represented by SEQ ID NO: 1 of an amino acid sequence having at least 90% homology to the amino acid sequence represented by SEQ ID NO: 1, or a salt thereof. The claims recite a method of determining a ligand to the protein or its salt, which comprises bringing a test compound in contact with the protein or a salt thereof. The claims also recite a kit for screening a compound or its salt that alters the binding property between a ligand and the protein comprising the protein or a salt thereof.

Applicant's arguments (09 April 2004), as they pertain to the rejections have been fully considered but are not deemed to be persuasive for the following reasons.

(i) Applicant asserts that the instant specification describes the specific use of the invention. Applicant cites pg 48 of the specification to indicate that the protein and DNA are useful for the prevention and/or treatment of digestive system diseases (e.g. enrteritis, diarrhea, coporostasis, malabsorption syndrome, etc.). Applicant also cites pg 62 of the specification to indicate that agonists to the protein are useful as safe and low toxic prophylactic and/or therapeutic agents for treatment of digestive system diseases.

Applicant's arguments have been fully considered but are not found to be persuasive. Although Applicant asserts that the claimed protein is involved in a number of digestive system diseases, such as enrteritis, diarrhea, coporostasis, and malabsorption syndrome, this assertion is not specific or substantial. The specification does not disclose a correlation between any specific disorder and an altered level or form of the h-ZAQ polypeptide. In order for a polypeptide to be useful, as asserted, for diagnosis or treatment of a disease, there must be a well-established or disclosed correlation or relationship between the polynucleotide or polypeptide and a disease or disorder. Also, the specification does not teach any specific diseases or conditions (particularly related to the digestive system) that are associated with a mutated, deleted, overexpressed, or underexpressed protein of the instant application (SEQ ID NO: 1). Significant further experimentation would be required by the skilled artisan to identify such a disease or condition in a subject, as well as the specific tissues or cells that are involved. Since this asserted utility is also not present in mature form so that it could be readily used in a real world sense, the asserted utility is not substantial.

Furthermore, regarding the use of agonists to the protein as therapeutic agents for treatment of digestive system diseases, this asserted utility is not specific or substantial. Such experiments can be performed with any agent. Additionally, the specification discloses nothing specific or substantial for the agonists that can be identified by this method. Since this asserted utility is also not present in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

Although a patent need not disclose what is well-known in the art, the instant application has failed to provide guidance as to how one of skill in the art could use the claimed invention in

a way that constitutes a credible, specific and substantial utility. The proposed uses of the claimed invention are simply starting points for further research and investigation into potentially practical uses of the polypeptide encoded by the claimed polynucleotide. "Congress intended that no patent be granted on a chemical compound whose sole 'utility' consists of its potential role as an object of use-testing." *Brenner v. Manson*, 148 USPQ at 696.

(ii) Applicant contends that in the working examples, the specification describes the isolation of h-ZAQ and its activity measured by FLIPR (Examples 1-3), the isolation of h-ZAQ ligand, and the h-ZAQ activity when binding to the ligand, measured by FLIPR (Examples 4-6). Applicant argues that the FLIPR assays clearly demonstrate that the h-ZAQ shows its physiological activity (i.e., increase in intracellular calcium ion concentration). Applicant submits that the fact that a specific GPCR behaves in a manner similar to other GPCRs does not render it non-useful. Applicant cites Masuda et al. (Biochem Biophys Res Comm 293 : 396-402, 2002).

Applicant's arguments have been fully considered but are not found to be persuasive. As discussed in the previous Office Action of 04 November 2003, relevant literature teaches that intracellular calcium is a universal second messenger that serves as a broad-based measure of receptor activity (Lin et al., Biotechniques 26: 318-326, 1999; abstract). Kassack et al. also echoes Lin et al. by teaching that "increase in intracellular Ca^{2+} appears to represent a universal second messenger signal for a majority of recombinant GPCRs" (pg 233, abstract). G protein-coupled receptors appear to be *generalists* in their intracellular transduction cascades, and one would expect that an unknown receptor *would* likely generate an increase in intracellular calcium

after receptor activation. The specification does not disclose any methods or working examples that indicate the protein of the instant invention is involved in any *specific* activities. Also, as mentioned above, the specification discloses nothing specific or substantial for the proteins or compounds utilized in the FLIPR assays. For example, it is not clear what substances or class of substances were used in the FLIPR screening assays. Additionally, G protein-coupled receptors (GPCRs) and signaling molecules are extremely diverse, as evidenced by Ji et al. (J Biol Chem 273(28): 17299-17302, 1998; see for example the first 4 paragraphs at pg 17299), and each new GPCR/signaling molecule needs to be evaluated empirically to determine the precise role(s) it plays. Since the utility is not presented in mature form and significant further research is required, the utility is not substantial. The specification of the instant application does not teach the skilled artisan which domains of the h-ZAQ polynucleotide and polypeptide are structurally characteristic of G protein-coupled receptors. One skilled in the art would not know the utility and function of h-ZAQ (SEQ ID NO: 1), even if it was a putative G protein coupled receptor because, as discussed in the related art above, G protein coupled receptors include a wide range of biologically active receptors, and neither the prior art, post-filing date reference (Masuda et a.), nor the specification provides for the physiological significance of the disclosed and claimed receptor.

(iii) Applicant asserts that the utility of the present application can be confirmed by Li et al. (Molec Pharmacol 59: 692-698, 2001). Applicant states that this paper demonstrates that human derived ZAQ ligand has an action on gastrointestinal tract contraction. Applicant indicates that prokineticin-1 corresponds to h-ZAQ ligand. Applicant argues that this paper describes the

effects of prokineticins on the contractility of guinea pig ileal longitudinal muscle (Figure 4). Applicant points out that the reference concludes that prokineticins specifically stimulate the contraction of GI smooth muscle and the discovery of an endogenous regulator of GI smooth muscle should facilitate the development of novel therapeutics.

Applicant's arguments have been fully considered but are not found to be persuasive. IT is noted the Examiner has considered Li et al. However, the specification of the instant application does not disclose a nexus between the stimulation of contraction of GI smooth muscle and the *h-ZAQ polypeptide*. Claims 1-11 and 21 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to an invention with no apparent or disclosed specific and substantial credible utility. The instant application has provided a description of an isolated nucleic acid molecule encoding a protein and the protein encoded thereby. The instant application does not disclose the biological role of this nucleic acid molecule and protein or their significance.

It is clear from the instant specification that the "h-ZAQ" protein described therein is what is termed an "orphan protein" in the art. This is a protein whose cDNA has been isolated because of its similarity to known proteins. There is little doubt that, after complete characterization, this DNA and protein, may be found to have a specific and substantial credible utility. This further characterization, however, is part of the act of invention and until it has been undertaken, Applicant's claimed invention is incomplete. The instant situation is directly analogous to that which was addressed in *Brenner v. Manson*, 148 U.S.P.Q. 689 (Sus. Ct, 1966), in which a novel compound which was structurally analogous to other compounds which were known to possess anti-cancer activity was alleged to be potentially useful as an anti-tumor agent

in the absence of evidence supporting this utility. The court expressed the opinion that all chemical compounds are "useful" to the chemical arts when this term is given its broadest interpretation. However, the court held that this broad interpretation was not the intended definition of "useful" as it appears in 35 U.S.C. §101, which requires that an invention must have either an immediately obvious or fully disclosed "real world" utility. The court held that:

> "The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility", "[u]nless and until a process is refined and developed to this point-where specific benefit exists in currently available form-there is insufficient justification for permitting an applicant to engross what may prove to be a broad field", and "a patent is not a hunting license", "[i]t is not a reward for the search, but compensation for its successful conclusion."

(iv) Applicant argues that U.S. Patent 5,891,720 was issued with limited descriptions regarding the use of the invention and the limited experimental data. Applicant states that '720 did not show any specific activities of the subject protein or polynucleotide . Applicant contends that compared to the description of '720, the description of the present application demonstrates a far great credible utility.

Applicant's arguments have been fully considered but are not found to be persuasive. Specifically, the current rejection is in compliance with the most currently-published version of the Utility Guidelines which require that all biological inventions must have credible, specific and substantial ("real world") utility. Additionally, each Patent Application is examined on its

own merits. The invention that was deemed allowable in one patent has no bearing on this application.

4. Claims 1, 9, and 11 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention. The basis for this rejection is set forth at pg 6-9 of the previous Office Action.

4a. Furthermore, claims 1, 9, and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are directed to a purified protein which comprises the amino acid sequence represented by SEQ ID NO: 1 of an amino acid sequence having at least 90% homology to the amino acid sequence represented by SEQ ID NO: 1, or a salt thereof. The claims recite a method of determining a ligand to the protein or its salt, which comprises bringing a test compound in contact with the protein or a salt thereof. The claims also recite a kit for screening a compound or its salt that alters the binding property between a ligand and the protein comprising the protein or a salt thereof.

Applicant's arguments (09 April 2004), as they pertain to the rejections have been fully considered but are not deemed to be persuasive for the following reasons.

Applicant asserts that claim 1 has been amended in the interests of furthering the prosecution of the case.

Applicant's arguments have been fully considered but are not found to be persuasive. Specifically, since Applicant has not provided evidence to demonstrate that the h-ZAQ polypeptide has a credible, specific and substantial asserted utility or a well established utility, one skilled in the art would not know how to use the claimed invention.

Additionally, as discussed in the previous Office Action of 04 November 2003, the specification does not teach any variants, homologs, or fragments of the brain derived protein of SEQ ID NO: 1. Additionally, the specification does not teach any specific functional or structural characteristics of any polynucleotide/protein variants, homologs, or fragments in the context of a cell or organism. The references in the previous Office Action were cited to emphasize that the problem of predicting protein and DNA structure from sequence data and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein and DNA is extremely complex. Certain positions in the amino acid sequence are critical to the protein's structure/function relationship, e.g. such as various sites or regions directly involved in binding, activity, and in providing the correct three-dimensional spatial orientation of binding and active sites. 'These regions can tolerate only relatively conservative substitutions or no substitutions. Related literature, such as Spiegel (Annual Rev. Physiol. 58:143-170, 1995) and Pauwels et al. (Molec. Neurobiol. 17(1-3): 109-135, 1998) discuss gain-of-function and loss-of-function mutations in G protein-coupled receptors that cause a wide spectrum of hereditary and somatic disorders and diseases. For example, the ***single*** mutation of a lysine residue to a glutamate residue at position 296 in the rhodopsin receptor results in constitutive activation of

that receptor and autosomal dominant retinitis pigmentosa (see Pauwels et al., pg 122, table 3). Applicant has provided little or no guidance beyond the mere presentation of sequence data to enable one or ordinary skill in the art to determine, without undue experimentation, the positions in the h-ZAQ protein and DNA which are tolerant to change and the nature and extent of changes that can be made in these positions.

Furthermore, relevant literature reports examples of polypeptide families wherein individual members have distinct, and sometimes even opposite, biological activities. For example, Tischer et al. (U.S. Patent 5,194,596) establishes that VEGF (a member of the PDGF, or platelet-derived growth factor, family) is mitogenic for vascular endothelial cells but not for vascular smooth muscle cells, which is opposite to the mitogenic activity of naturally occurring PDGF which is mitogenic for vascular smooth muscle cells but not for vascular endothelial cells (column 2, line 46 to column 3, line 2). The differences between PDGF and VEGF are also seen *in vivo*, wherein endothelial-pericyte associations in the eye are disrupted by intraocular administration of PDGF but accelerated by intraocular administration of VEGF (Benjamin et al., 1998, Development 125:1591-1598; see Abstract and pp. 1594-1596). In the transforming growth factor (TGF) family, Vukicevic et al. (1996, PNAS USA 93:9021-9026) disclose that OP-1, a member of the TGF-β family of proteins, has the ability to induce metanephrogenesis, whereas closely related TGF-β family members BMP-2 and TGF-β1 had no effect on metanephrogenesis under identical conditions (p. 9023, paragraph bridging columns 1-2). See also Massague, who reviews other members of the TGF-β family (1987, Cell 49:437-8, esp. p. 438, column 1, second full paragraph to the end). Similarly, PTH and PTHrP are two structurally closely related proteins which can have opposite effects on bone resorption (Pilbeam

et al., 1993, Bone 14:717-720; see p. 717, second paragraph of Introduction). Finally, Kopchick et al. (U.S. Patent 5,350,836) disclose several antagonists of vertebrate growth hormone that differ from naturally occurring growth hormone by a single amino acid (column 2, lines 37-48).

Generally, the art acknowledges that function cannot be predicted based solely on structural similarity to a protein found in the sequence databases. For example, Skolnick et al. (2000, Trends in Biotech. 18:34-39) state that knowing the protein structure by itself is insufficient to annotate a number of functional classes, and is also insufficient for annotating the specific details of protein function (see Box 2, p. 36). Similarly, Bork (2000, Genome Research 10:398-400) states that the error rate of functional annotations in the sequence database is considerable, making it even more difficult to infer correct function from a structural comparison of a new sequence with a sequence database (see especially p. 399). Such concerns are also echoed by Doerks et al. (1998, Trends in Genetics 14:248-250) who state that (1) functional information is only partially annotated in the database, ignoring multi functionality, resulting in underpredictions of functionality of a new protein and (2) overpredictions of functionality occur because structural similarity often does not necessarily coincide with functional similarity. Smith et al. (1997, Nature Biotechnology 15:1222-1223) remark that there are numerous cases in which proteins having very different functions share structural similarity due to evolution from a common ancestral gene. Brenner (1999, Trends in Genetics 15:132-133) argues that accurate inference of function from homology must be a difficult problem since, assuming there are only about 1000 major gene superfamilies in nature, then most homologs must have different molecular and cellular functions. Finally, Bork et al. (1996, Trends in Genetics 12:425-427) add that the software robots that assign functions to new proteins often assign a function to a whole

new protein based on structural similarity of a small domain of the new protein to a small domain of a known protein. Such questionable interpretations are written into the sequence database and are then considered facts.

Proper analysis of the Wands factors was provided in the previous Office Action. Due to the large quantity of experimentation necessary to generate the infinite number of derivatives recited in the claims and possibly screen same for activity, the lack of direction/guidance presented in the specification regarding which structural features are required in order to provide activity, the absence of working examples directed to same, the complex nature of the invention, the state of the prior art which establishes the unpredictability of the effects of mutation on protein structure and function and that biological activity cannot be predicted based on structural similarity, and the breadth of the claims which fail to recite any structural or functional limitations and also embrace a broad class of structural fragments and variants, undue experimentation would be required of the skilled artisan to make and/or use the claimed invention in its full scope.

5. Claims 1, 9, and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The basis for this rejection is set forth at pg 9-11 of the previous Office Action (04 November 2003).

The claims are directed to a purified protein which comprises the amino acid sequence represented by SEQ ID NO: 1 of an amino acid sequence having at least 90% homology to the amino acid sequence represented by SEQ ID NO: 1, or a salt thereof. The claims recite a method of determining a ligand to the protein or its salt, which comprises bringing a test compound in contact with the protein or a salt thereof. The claims also recite a kit for screening a compound or its salt that alters the binding property between a ligand and the protein comprising the protein or a salt thereof.

Applicant's arguments (09 April 2004) as they pertain to the rejections have been fully considered but are not deemed to be persuasive for the following reasons.

Applicant disagrees for the reasons outlined above, but have amended claim 1 in the interests in the interests of furthering the prosecution of the case.

Applicant's arguments have been fully considered but are not found to be persuasive. Applicant has not provided evidence to demonstrate that the skilled artisan would be able to envision the detailed structure of the infinite number of polypeptides recited in the claims. The description of one h-ZAQ polynucleotide and polypeptide in the specification of the instant application is not a representative number of embodiments to support the description of an entire genus of functionally equivalent polynucleotides and polypeptides which incorporate all variants and fragments comprising at least 90% homology to the amino acid sequence represented by SEQ ID NO: 1. Therefore, only an isolated protein consisting of the sequence of SEQ ID NO: 1, but not the full breadth of the claim meets the written description provision of 35 U.S.C. §112, first paragraph. Furthermore, the broad brush discussion of making or screening for variants does not constitute a disclosure of a representative number of members. No such variants were

made or shown to have activity. Only one member, the polypeptide of SEQ ID NO: 1, was disclosed. The specification's general discussion of making and screening for variants constitutes an invitation to experiment by trial and error. Such does not constitute an adequate written description for the claimed variants.

Claim Rejections - 35 USC § 112

7. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 9 is indefinite because the claim does not have a step that clearly relates back to the preamble. The basis for this rejection is set forth at pg 11 of the previous Office Action.

Applicant's arguments (09 April 2004), as they pertain to the rejections have been fully considered but are not deemed to be persuasive for the following reasons.

Applicant submits that the amendments to claim 9 place claim 9 in condition for allowance. Applicant's arguments have been fully considered but are not found to be persuasive. Claim 9 still does not indicate a step that indicates how a ligand is identified by bringing a test compound in contact with the protein. Is the compound itself being tested a potential ligand for the protein? Or, is the compound used in conjunction with other proteins and the hZAQ of the instant application? Does binding of the test compound to the protein indicate that the test compound is a ligand?

Conclusion

No claims are allowable.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bridget E. Bunner whose telephone number is (571) 272-0881. The examiner can normally be reached on 8:30-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Kunz can be reached on (571) 272-0887. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elizabeth C. Kemmerer

BEB
Art Unit 1647
22 June 2004

ELIZABETH KEMMERER
PRIMARY EXAMINER